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DEPARTMENT OF AGRICULTURE,
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FIELD EXPERIMENTS WITH SUGAR CANE, XIV.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XI.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1945.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA,
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C. Cameron	Field Manager.
G. R. Dias	Field Assistant *(to January).*
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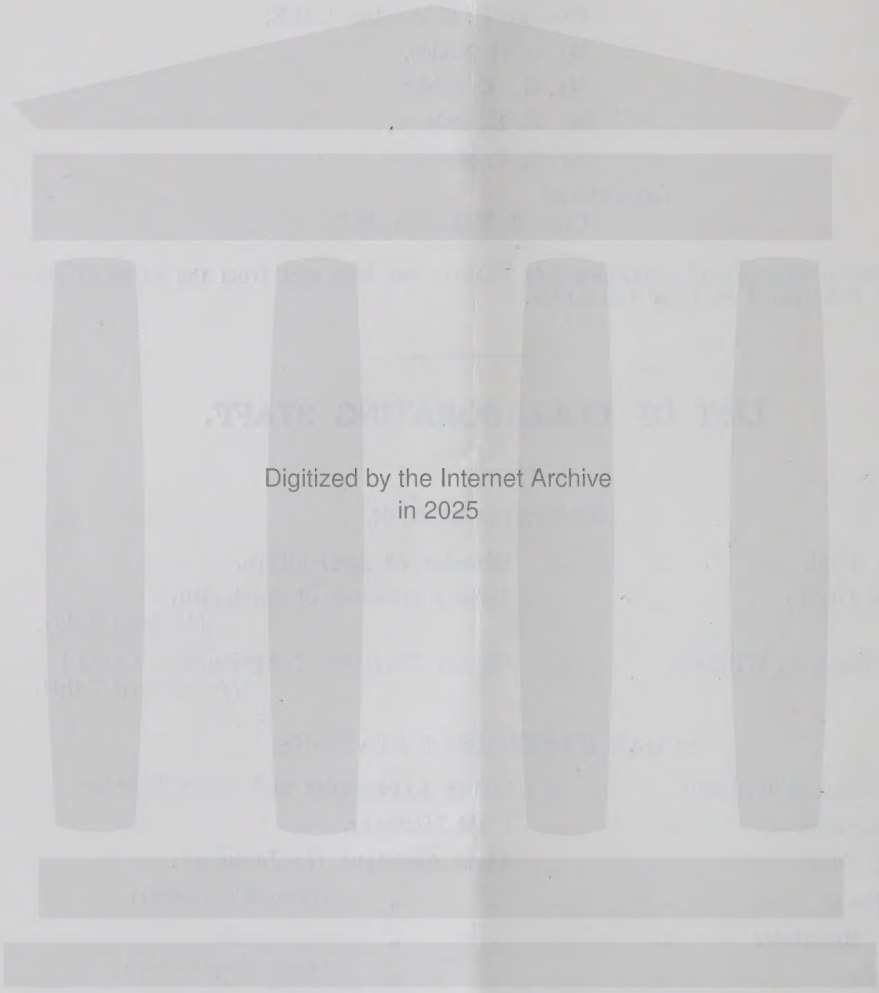

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FIELD EXPERIMENTS WITH SUGAR CANE, XIV.

BY

C. HOLMAN B. WILLIAMS, *Sugar Agronomist and Plant Breeder,*

AND

C. CAMERON, *Field Manager.*

INTRODUCTION.

The results of 36 variety and 14 manurial trials, reaped during the year 1945, are presented in this paper. The experiments were laid out to permit of the analysis of variance.

Table I indicates that the total rainfall for the period was well above the average but, whereas much of the excess occurred in the wet months of May and June, the critical dry months of March, September and October were even drier than usual. Unusually heavy rains in February helped out the Spring dry season but the Autumn dry season was accentuated by an early commencement in August.

TABLE I.—**Comparison of January-December Rainfall at Sophia Sugar Experiment Station for 1945 with the Average for 1921-1945.**

Month.	Actual Rainfall, 1945. Inches.	Average Rainfall, 1921—1945, Inches.	Excess or Deficit, Inches.
January 1945	2.55	8.76	— 6.21
February „	18.57	4.62	13.95
March „	2.32	4.68	— 2.36
April „	9.98	6.19	3.79
May „	19.97	11.87	8.10
June „	24.21	14.90	9.31
July „	10.81	11.39	— 0.58
August „	1.99	7.75	— 5.76
September „	2.11	2.63	— 0.52
October „	2.50	3.92	— 1.42
November „	9.41	5.69	3.72
December „	10.84	14.66	— 3.82
Total	115.26	97.06	18.20

VARIETY TRIALS.

The variety trials are detailed under four sub-sections, *viz.*:—

(a) Plant cane variety trials;

(b) First ratoon variety trials;

(c) Second ratoon variety trials;

(d) Discussion and summary.

SUB-SECTION A.—PLANT CANE VARIETY TRIALS.

Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

Data from the plant cane variety trials reaped at the Sophia Sugar Experiment Station are presented in Table II. All four tests were reaped in the Autumn and cane yields were fair in Field 8 E. but somewhat low in Field 2 E. Purities were, on the whole, satisfactory but in Field 8 E. "A" five varieties yielded rather high glucose ratios, indicating immaturity. Attention may be called to the following points :—

i. The standard cane, P.O.J. 2878, was last in three of the four tests and third from last in the fourth;

ii. Co. 421 (P.O.J. 2878 x B. 3412) occurred in two tests and headed the list each time;

iii. D. 166/34 (P.O.J. 2878 x Sorghum) occurred in two tests and led the standard by wide margins on each occasion;

iv. D. 2/40 (Co. 281 x D. 165/30) and D. 21/40 (Co. 421 x Co. 419) both occurred twice and gave good accounts of themselves as regards both tonnage and quality, although D. 21/40 was somewhat immature at thirteen months in Field 8 E. "A";

v. B. 34104 (Co. 281 x B.H. 10/12) was significantly better than P.O.J. 2878 in the one test in which it occurred but was itself significantly surpassed by D. 21/40 (Co. 421 x Co. 419);

vi. B. 37161 (B. 3365 x B. 603) was significantly inferior to Co. 421 in the one test in which they met but was, itself, significantly better than P.O.J. 2878;

vii. The following Demerara seedlings will be discarded from future trials: 34/38, 4/40, 10/40, 11/40, 14/40, 22/40, 24/40, 27/40, 31/40, 33/40 and 34/40.

TABLE II.—Results of Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
	Sophia, Field 2 E. "A." Reaped 10.viii.45 at 13.50 months.						
MEANS OF 4 PLOTS:	D. 166/34	24.41	14.31	4.59	91.1	3.50	109.37
	D. 2/40	27.17	12.43	3.83	91.5	3.38	105.62
	D. 11/40	29.59	11.20	7.66	88.4	3.31	103.44
	D. 4/40	25.76	12.03	3.50	89.2	3.10	96.87
	D. 10/40	24.16	12.61	3.29	90.5	3.04	95.00
	P.O.J. 2878	21.18	13.54	4.30	89.7	2.87	89.69
	Mean:					3.20	100.00
	Significant Difference, 20: 1:					—	—
	Sophia, Field 2 E. "B." Reaped 4.viii.45 at 13.25 months.						
MEANS OF 4 PLOTS:	D. 21/40	31.06	13.24	5.06	86.5	4.11	135.20
	Co. 331	28.56	12.55	3.89	86.6	3.58	117.76
	D. 166/34	24.20	13.73	4.82	88.7	3.32	109.21
	D. 30/40	24.53	13.32	3.50	88.9	3.27	107.57
	D. 34/40	23.97	12.78	4.20	87.4	3.06	100.66
	B. 34104	22.80	12.80	3.48	86.9	2.92	96.05
	D. 22/40	22.80	12.73	4.21	84.3	2.90	95.39
	D. 33/40	19.95	13.21	4.82	90.4	2.63	86.51
	D. 31/40	18.34	12.97	4.37	88.9	2.38	78.29
	P.O.J. 2878	18.26	12.43	4.97	87.6	2.27	74.67
	Mean:					3.04	100.00
	Significant Difference, 20: 1:					0.52	17.11
	Sophia, Field 8 E. "A." Reaped 11.ix.45 at 13.00 months.						
MEANS OF 4 PLOTS:	Co. 421	35.25	14.79	4.31	89.0	5.21	124.05
	D. 2/40	32.58	14.38	5.07	88.0	4.68	111.43
	D. 21/40	37.26	12.45	12.89	83.5	4.64	110.48
	D. 40/40	32.68	13.21	11.98	84.4	4.32	102.86
	D. 30/40	29.94	14.17	6.43	88.4	4.24	100.95
	D. 4/40	28.10	14.25	10.03	85.3	4.00	95.24
	D. 22/40	30.01	11.74	10.43	83.2	3.52	83.81
	P.O.J. 2878	24.26	12.40	9.53	84.1	3.01	71.67
	Mean:					4.20	100.00
	Significant Difference, 20: 1:					0.79	18.81
	Sophia, Field 8 E. "B." Reaped 5.ix.45 at 12.00 months.						
MEANS OF 4 PLOTS:	Co. 421	38.14	16.29	2.82	90.7	6.21	147.16
	B. 37161	32.32	14.77	4.00	90.0	4.77	113.03
	D. 24/40	32.28	13.94	3.17	90.5	4.50	106.63
	D. 11/40	31.20	14.31	6.53	88.2	4.46	105.69
	D. 34/40	27.19	14.45	4.15	92.2	3.93	93.13
	D. 27/40	25.40	14.82	6.66	88.1	3.76	89.10
	P.O.J. 2878	26.20	13.60	2.95	93.7	3.56	84.36
	D. 14/40	26.44	13.40	5.37	90.4	3.54	83.89
	D. 34/38	21.67	15.01	4.79	89.3	3.25	77.01
	Mean:					4.22	100.00
	Significant Difference, 20: 1:					0.70	16.59

PLANT CANE VARIETY TRIALS REAPED IN BERBICE AND EAST DEMERARA.

Table III records the results of two plant cane variety trials from Berbice and of three from East Demerara. Tonnages were, on the whole, satisfactory but glucose ratios were high for certain canes at Port Mourant and Rose Hall, and for all varieties at La Bonne Intention where the field was harvested under thirteen months of age. It will be noted that:—

i. D. 25/38 (Co. 421 x Diamond 10) surpassed P.O.J. 2878 in all three tests in which they met, the difference being statistically significant on two occasions;

ii. D. 200/36 (P.O.J. 2878 x Co. 213) was significantly better than P.O.J. 2878 in the one trial in which both appeared;

iii. Co. 331 (Co. 214 x Co. 213) did well in its four trials but, in general, its position is due to a heavy tonnage of somewhat poor cane and its extension cannot be advised.

TABLE III.— Results of Plant Cane Variety Trials Reaped in Berbice and East Demerara.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.	
						Tons.	% Mean.
	Pln.	*Port Mourant, Field*		*13 A. Reaped*	*3.x.45*	*at 13.75*	*months*
MEANS OF 5 PLOTS:	D. 25/38	53.85	13.49	6.58	87.3	7.26	118.63
	Co. 331	53.29	12.34	6.47	86.8	6.57	107.35
	D. 11/40	47.74	12.72	19.89	78.6	6.07	99.18
	D. 21/40	51.31	11.12	18.40	78.6	5.70	93.14
	P.O.J. 2878	41.72	12.02	16.67	82.0	5.01	81.86
	Mean:					6.12	100.00
	Significant Difference, 20 : 1:					0.84	13.73
	Pln. Rose Hall, Field		*13 B. Reaped*	*2.v.45*	*at 12.00*	*months.*	
MEANS OF 5 PLOTS:	D. 201/36	40.13	14.69	14.99	84.7	5.89	100.86
	Co. 331	43.54	13.51	16.01	86.9	5.88	100.68
	P.O.J. 2878	38.14	15.07	6.19	90.4	5.75	98.46
	Mean:					5.84	100.00
	Significant Difference, 20 : 1:					—	—
	Pln. Lusignan, Field 49 W.		*M.R. Reaped*	*26.iv.45*	*at 13.25*	*months.*	
MEANS OF 5 PLOTS:	D. 43/38	35.48	15.02	2.51	91.3	5.33	104.72
	D. 25/38	34.57	14.82	2.39	91.4	5.12	100.59
	P.O.J. 2878	34.28	14.04	3.55	88.5	4.81	94.50
	Mean:					5.09	100.00
	Significant Difference, 20: 1:					—	—
	Pln. L.B.I., Field		*38 L.R.*	*Reaped*	*26.ix.45*	*at 12.75*	*months.*
MEANS OF 5 PLOTS:	Co. 331	52.45	15.06	9.26	85.3	7.90	113.67
	D. 25/38	50.21	15.13	12.24	84.2	7.60	109.35
	P.O.J. 2878	45.86	14.33	19.10	82.3	6.57	94.53
	D. 2/40	43.37	14.78	12.41	85.5	6.41	92.23
	D. 21/40	51.33	12.21	29.32	78.4	6.27	90.22
	Mean:					6.95	100.00
	Significant Difference, 20: 1:					1.02	14.68
	Pln. Ogle, Field 78		*G.V. Reaped*	*1.v.45*	*at 13.50*	*months.*	
MEANS OF 5 PLOTS:	D. 200/36	48.88	14.11	6.63	88.0	6.90	105.34
	Co. 331	52.76	13.01	4.64	83.4	6.86	104.73
	P.O.J. 2878	42.54	13.86	6.08	86.8	5.89	89.92
	Mean:					6.55	100.00
	Significant Difference, 20 : 1:					0.46	7.02

SUB-SECTION B.—FIRST RATOON VARIETY TRIALS.

First Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

In Table IV will be found the data from nine first ratoon variety trials harvested at the Sophia Sugar Experiment Station. Tonnages were, on the whole, satisfactory and the quality of the cane good. Attention may be called to the following points:—

i. D. 25/38 (Co. 421 x Diamond 10) appeared in four tests, surpassing P.O.J. 2878, in total yield for two crops, by wide margins in each instance;

ii. D. 28/38 (Co. 421 x Diamond 10) gave a good account of itself in its three tests, producing cane of high quality;

iii. D. 21/40 (Co. 421 x Co. 419) was very definitely superior to P.O.J. 2878 both as a first ratoon and in total yield for two crops in the one trial in which both appeared;

iv. D. 26/39 (Co. 421 x D. 166/34) and D. 2/40 (Co. 281 x D. 165/30) gave indications of being useful canes.

TABLE IV.—Results of First Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
	Sophia, Field 10 E. Reaped 14.xi.45 at 11.75 months.								
MEANS OF 4 PLOTS:	Co. 331	30.31	14.49	4.02	86.4	4.39	111.42	D. 25/38	10.99
	D. 28/38	25.81	16.00	5.21	88.1	4.13	104.82	D. 28/38	10.52
	P.O.J. 2878	26.26	15.43	4.70	88.7	4.05	102.79	Co. 331	9.76
	D. 25/38	27.69	14.36	5.42	86.3	3.98	101.02	D. 43/38	9.39
	D. 43/38	24.99	15.86	3.08	91.8	3.96	100.51	D. 24/40	9.14
	D. 201/36	29.08	14.17	9.42	85.6	3.87	98.22	D. 201/36	8.81
	D. 166/34	24.83	14.48	6.11	89.4	3.60	91.37	P.O.J. 2878	8.66
	D. 24/40	28.08	12.68	7.26	84.9	3.56	90.36	D. 166/34	7.66
	Mean:					3.94	100.00		
	Significant Difference, 20:1:					—	—		
	Sophia, Field 2 W. "A." Reaped 28.ix.45 at 12.25 months.								
MEANS OF 4 PLOTS:	D. 28/38	33.91	15.37	3.09	88.7	5.21	118.68	D. 28/38	11.30
	D. 25/38	37.41	13.91	5.51	85.6	5.20	118.45	Co. 331	11.24
	Co. 331	34.51	13.89	6.64	86.5	4.79	109.11	D. 25/38	10.71
	D. 4/40	32.85	12.74	9.12	83.2	4.19	95.44	D. 2/40	9.96
	D. 2/40	32.19	12.23	8.70	84.5	3.94	89.75	D. 4/40	9.80
	D. 166/34	27.82	13.50	7.53	88.7	3.75	85.42	D. 166/34	7.90
	P.O.J. 2878	27.91	13.06	11.18	84.9	3.64	82.92	P.O.J. 2878	7.88
	Mean:					4.39	100.00		
	Significant Difference, 20:1:					0.56	12.76		
	Sophia, Field 2 W. "B." Reaped 1.x.45 at 12.25 months.								
MEANS OF 4 PLOTS:	D. 166/34	32.10	14.88	4.42	80.7	4.77	107.43	D. 166/34	11.11
	D. 10/40	31.49	14.08	4.14	87.2	4.43	99.77	D. 10/40	10.03
	P.O.J. 2878	32.53	13.59	5.16	87.3	4.42	99.55	D. 11/40	9.54
	D. 11/40	31.62	13.14	4.86	85.2	4.15	93.47	P.O.J. 2878	9.08
	Mean:					4.44	100.00		
	Significant Difference, 20:1:					—	—		
	Sophia, Field 5 W. "A." Reaped 4. x. 45 at 11.75 months.								
MEANS OF 4 PLOTS:	Co. 331	39.25	14.45	3.45	89.6	5.67	117.15	Co. 331	12.30
	D. 26/39	34.61	15.56	3.02	91.4	5.38	111.16	D. 26/39	11.14
	D. 166/34	29.68	14.88	3.15	92.0	4.40	90.91	P.O.J. 2878	9.93
	P.O.J. 2878	25.62	15.26	3.07	90.8	3.91	80.79	D. 166/34	8.80
	Mean:					4.84	100.00		
	Significant Difference, 20:1:					0.64	13.22		
	Sophia, Field 5 W. "B." Reaped 4. x. 45 at 12.00 months.								
MEANS OF 4 PLOTS:	D. 2/40	38.63	15.19	3.48	88.7	5.87	123.32	D. 2/40	12.74
	D. 166/34	33.46	14.98	3.02	90.4	5.01	105.25	D. 4/40	11.52
	D. 4/40	31.77	14.05	3.84	86.8	4.46	93.70	P.O.J. 2878	10.11
	P.O.J. 2878	27.27	13.58	3.92	86.6	3.70	77.73	D. 166/34	9.54
	Mean:					4.76	100.00		
	Significant Difference, 20:1:					0.58	12.18		

TABLE IV (Contd.).—**Results of First Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
		Sophia, Field 11 W. "A." Reaped				*23.x.45*	*at 12.00*	*months.*	
MEANS OF 4 PLOTS:	D. 21/40	32.90	14.10	6.63	87.6	4.64	115.71	D. 21/40	9.67
	D. 30/40	31.98	13.94	3.56	88.0	4.46	111.22	D. 30/40	8.96
	D. 24/40	29.28	15.01	3.76	87.8	4.39	109.48	D. 24/40	8.88
	D. 166/34	22.25	15.04	3.33	90.3	3.34	83.29	D. 166/34	8.78
	P.O.J. 2878	21.14	15.24	3.68	88.7	3.22	80.30	P.O.J. 2878	7.02
	Mean:					4.01	100.00		
	Significant Difference, 20:1:					0.77	19.20		
		Sophia, Field 11 W. "B." Reaped				*25.x.45*	*at 12.00*	*months.*	
MEANS OF 4 PLOTS:	Co. 331	34.42	13.12	6.02	84.9	4.52	120.86	Co. 331	10.50
	D. 25/38	29.40	15.16	3.02	89.8	4.46	119.25	D. 25/38	9.39
	D. 166/34	24.91	15.06	3.62	89.8	3.75	100.27	D. 43/38	8.48
	D. 43/38	24.41	13.55	3.91	90.3	3.31	88.50	D. 166/34	8.28
	P.O.J. 2878	19.59	13.52	4.47	88.2	2.65	70.86	P.O.J. 2878	6.64
	Mean:					3.74	100.00		
	Significant Difference, 20:1:					0.59	15.78		
		Sophia, Field 12 W. "A." Reaped				*20.x.45*	*at 12.00*	*months.*	
MEANS OF 4 PLOTS:	Co. 331	33.72	12.97	5.03	86.4	4.37	111.20	D. 43/38	10.17
	D. 28/38	27.81	15.02	3.71	88.0	4.18	106.36	D. 201/36	9.57
	D. 43/38	31.52	13.09	4.77	88.6	4.12	104.83	Co. 331	9.56
	D. 166/34	29.29	13.70	5.01	88.3	4.01	102.04	D. 28/38	9.32
	D. 201/36	29.50	12.74	9.06	84.4	3.76	95.67	D. 166/34	8.59
	P.O.J. 2878	25.30	12.50	5.39	86.8	3.16	80.41	P.O.J. 2878	8.43
	Mean:					3.93	100.00		
	Significant Difference, 20:1:					—	—		
		Sophia, Field 12 W. "B." Reaped				*17.x.45*	*at 12.00*	*months.*	
MEANS OF 4 PLOTS:	D. 25/38	37.14	14.30	4.62	91.1	5.31	131.76	D. 25/38	11.64
	D. 24/40	29.42	14.44	4.41	89.5	4.25	105.46	Co. 331	11.06
	Co. 331	30.75	13.66	6.21	88.5	4.20	104.22	D. 24/40	10.44
	D. 43/38	26.45	14.17	3.80	92.0	3.74	92.80	D. 43/38	9.43
	D. 166/34	27.87	12.76	5.09	89.5	3.55	88.09	D. 166/34	9.40
	P.O.J. 2878	24.06	12.95	6.75	89.1	3.11	77.17	P.O.J. 2878	8.97
	Mean:					4.03	100.00		
	Significant Difference, 20:1:					0.99	24.57		

FIRST RATOON VARIETY TRIALS REAPED IN BERBICE AND EAST DEMERARA.

The data from four first ratoon variety trials reaped in Berbice and East Demerara appear in Table V where it will be noticed that yields were high at Port Mourant and Bath but low at Albion and Enmore. The cane quality was satisfactory in all tests. It may be noted that:—

i. As first ratoons at Port Mourant B. 34104 (Co. 281 x B.H. 10/12) and D. 200/36 (P.O.J. 2878 x Co. 213) produced almost identical cane yields, of the order of 52 tons per acre, with cane quality being slightly in favour of the former;

ii. Both D. 200/36 (P.O.J. 2878 x Co. 213) and D. 25/38 (Co. 421 x Diamond 10) were disappointing at Albion but led the standard by significant margins at Enmore.

TABLE V.—**Results of First Ratoon Variety Trials Reaped in Berbice and East Demerara.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
	Pln. Port	*Mourant, Field*	*5 A. E.*	*Reaped*	*14.iii.45*	*at 11.75*	*months.*		
MEANS OF 5 PLOTS :	B. 34104	51.99	14.83	4.72	90.3	7.71	115.07	B. 34104	17.35
	D. 200/36	51.85	14.29	4.74	89.2	7.41	110.60	D. 200/36	15.11
	D. 166/34	39.11	15.17	5.62	90.3	5.93	88.51	P.O.J. 2878	13.47
	P.O.J. 2878	41.40	13.95	7.80	89.1	5.77	86.12	D. 166/34	13.46
	Mean :					6.70	100.00		
	Significant Difference, 20 : 1 :					0.71	10.60		
	Pln.	*Albion, Field*	*24 K.*	*Reaped*	*13.iii.45*	*at 11.75*	*months.*		
MEANS OF 5 PLOTS :	P.O.J. 2878	24.64	14.50	6.73	84.5	3.57	107.53	P.O.J. 2878	7.49
	D. 200/36	25.07	13.72	5.43	86.1	3.44	103.61	D. 166/34	7.32
	D. 25/38	24.37	13.30	7.25	87.6	3.24	97.59	D. 25/38	7.29
	D. 166/34	19.88	15.19	4.71	86.7	3.02	90.96	D. 200/36	6.62
	Mean :					3.32	100.00		
	Significant Difference, 20 : 1 :					—	—		
	Pln.	*Bath, Field*	*7 F.*	*Reaped*	*15.vi.45*	*at 12.25*	*months.*		
MEANS OF 5 PLOTS :	D. 201/36	43.72	14.47	6.09	90.2	6.33	111.44	D. 201/36	13.22
	D. 166/34	38.52	15.86	6.10	90.8	6.11	107.57	D. 166/34	13.10
	P.O.J. 2878	32.26	13.98	6.57	91.5	4.59	80.81	P.O.J. 2878	10.71
	Mean :					5.68	100.00		
	Significant Difference, 20 : 1 :					1.01	17.78		
	Pln. Enmore,	*Field 4*	*B. A.*	*Reaped*	*16.ii.45*	*at 11.00*	*months.*		
MEANS OF 5 PLOTS :	D. 25/38	20.37	11.97	6.13	90.2	2.44	109.42	D. 25/38	7.09
	D. 200/36	20.06	12.11	6.30	87.6	2.43	108.97	D. 200/36	6.95
	D. 166/34	19.10	11.76	4.71	88.0	2.25	100.90	D. 166/34	6.66
	P.O.J. 2878	15.62	11.57	6.49	87.8	1.81	81.17	P.O.J. 2878	4.93
	Mean :					2.23	100.00		
	Significant Difference, 20 : 1 :					0.31	13.90		

FIRST RATOON VARIETY TRIALS REAPED IN WEST DEMERARA.

Six first ratoon variety trials were harvested in West Demerara and their results appear in Table VI which indicates satisfactory tonnages only at Versailles and Uitvlugt. P.O.J. 2878 was immature at Versailles, Uitvlugt and Field 82 De W., De Kinderen, having been reaped at 11.75 months at the first

and last sites. D. 166/34 was immature at Leonora (10.75 months), Uitvlugt and Field 82 De W., De Kinderen. D. 26/39 (Co. 421 x D. 166/34), which shows much promise for this region, yields cane of good quality. It is one of a batch of seedlings placed in pegassy clay at the time of transplanting from the baskets and multiplied and selected on that soil type.

Table VI. — Results of First Ratoon Variety Trials Reaped in West Demerara.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
	Pln.	*Wales,*	*Field*	*32 Y.R.*	*Reaped*	*22. iii.*	*45 at 11.*	*50 months.*	
MEANS OF 5 PLOTS:	D. 26/38	21.86	14.75	4.37	87.8	3.23	109.12	D. 26/38	9.70
	P.O.J. 2878	19.34	14.76	5.01	91.9	2.85	96.28	D. 166/34	8.49
	D. 166/34	17.61	16.00	7.31	90.2	2.81	94.93	P.O.J. 2878	7.92
	Mean:					2.96	100.00		
	Significant Difference, 20 : 1:					—	—		
	Pln.	*Versailles,*	*Field*	*14 K.*	*P. Reaped*	*11.ix.*	*45 at 1*	*1.75 months.*	
MEANS OF 5 PLOTS:	D. 26/39	40.66	15.14	9.57	89.5	6.16	120.31	D. 26/39	13.92
	P.O.J. 2878	32.22	12.66	19.04	80.8	4.08	79.69	P.O.J. 2878	9.61
	Mean:					5.12	100.00		
	Significant Difference, 20 : 1:					0.79	15.43		
	Pln.	*Leonora,*	*Field*	*4 E. C.*	*Reaped*	*10.v.45*	*at 10.75*	*months.*	
MEANS OF 5 PLOTS:	D. 26/39	24.10	15.27	6.05	92.9	3.68	116.46	D. 26/39	8.17
	D. 166/34	23.25	13.11	12.64	86.9	3.05	96.52	D. 166/34	7.66
	D. 37/39	21.40	13.93	6.16	90.3	2.98	94.30	P.O.J. 2878	6.78
	P.O.J. 2878	20.70	14.24	6.46	91.5	2.95	93.35	D. 37/39	6.46
	Mean:					3.16	100.00		
	Significant Difference, 20 : 1:					0.43	13.61		
	Pln.	*Uitvlugt,*	*Field*	*42 DeW.*	*Reaped*	*28. viii.*	*45 at 12.*	*25 months.*	
MEANS OF 5 PLOTS:	D. 26/39	34.72	15.33	5.01	91.8	5.32	115.65	D. 26/39	9.27
	D. 166/34	33.83	14.29	9.89	87.4	4.84	105.22	D. 166/34	8.81
	P.O.J. 2878	27.25	13.32	11.23	88.1	3.63	78.91	P.O.J. 2878	7.11
	Mean:					4.60	100.00		
	Significant Difference, 20 : 1:					0.78	16.99		
	Pln.	*DeKinderen,*	*Field*	*17 E.*	*Reaped*	*24.iv.45*	*at 11.50*	*months.*	
MEANS OF 5 PLOTS:	D. 37/39	24.95	15.08	3.91	90.2	3.76	118.61	D. 37/39	8.13
	D. 26/39	23.01	15.10	3.56	92.6	3.47	109.46	D. 26/39	7.47
	D. 166/34	20.24	13.65	5.72	92.1	2.76	87.07	D. 166/34	7.30
	P.O.J. 2878	20.43	13.18	6.17	90.4	2.69	84.86	P.O.J. 2878	6.82
	Mean:					3.17	100.00		
	Significant Difference, 20 : 1:					0.49	15.46		
	Pln.	*DeKinderen,*	*Field*	*82*	*DeW.*	*Reaped*	*14.viii.*	*45 at 11.75*	*months.*
MEANS OF 5 PLOTS:	D. 26/39	20.70	14.51	7.65	89.9	3.00	115.38	D. 26/39	5.65
	D. 166/34	18.37	13.42	16.79	83.7	2.47	95.00	D. 166/34	5.33
	P.O.J. 2878	16.64	14.03	12.88	88.4	2.33	89.62	P.O.J. 2878	4.57
	Mean:					2.60	100.00		
	Significant Difference, 20 : 1:					—	—		

SUB-SECTION C.—SECOND RATOON VARIETY TRIALS.

Second Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

Six second ratoon variety trials reaped at the Sophia Sugar Experiment Station have yielded the results shown in Table VII. D. 14/33 (Co. 281 x Diamond 10) appeared in three tests and surpassed P.O.J. 2878 in all, both as a second ratoon and in total yield for three crops. B. 34104 (Co. 281 x B.H. 10/12) was outstanding in both of its tests.

TABLE VII.—Results of Second Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
		Sophia, Field 4		*E."A."*	*Reaped*	*30.viii.4*	*5 at 11.*	*50 months.*	
MEANS OF 4 PLOTS:	D. 166/34	17.91	14.50	5.17	90.3	2.59	116.67	D. 166/34	9.99
	P.O.J. 2878	13.19	14.00	4.21	91.1	1.85	83.33	P.O.J. 2878	7.51
	Mean:					2.22	100.00		
	Significant Difference, 20 : 1:					—	—		
		Sophia, Field 4		*E."B."*	*Reaped*	*28.viii.4*	*5 at 11.*	*75 months.*	
MEANS OF 4 PLOTS:	D. 166/34	17.46	15.70	4.89	92.1	2.74	110.93	D. 166/34	11.20
	D. 14/33	18.53	14.08	3.83	93.1	2.61	105.67	D. 14/33	10.08
	P.O.J. 2878	14.00	14.76	5.29	86.2	2.06	83.40	P.O.J. 2878	7.83
	Mean:					2.47	100.00		
	Significant Difference, 20: 1:					—	—		
		Sophia, Field 14		*E."A."*	*Reaped*	*25.ix.45*	*at 12.25*	*months.*	
MEANS OF 4 PLOTS:	D. 1/37	22.52	12.71	7.04	87.6	2.86	110.00	D. 1/37	14.58
	D. 166/34	19.47	14.04	10.07	89.1	2.73	105.00	D. 166/34	12.08
	P.O.J. 2878	15.87	13.97	9.33	87.5	2.22	85.38	P.O.J. 2878	10.32
	Mean:					2.60	100.00		
	Significant Difference, 20: 1:					0.42	16.15		
		Sophia, Field 14		*E."B."*	*Reaped*	*24.ix.45*	*at 12.25*	*months.*	
MEANS OF 4 PLOTS:	B. 34104	23.70	13.32	7.06	84.6	3.15	115.81	B. 34104	15.01
	D. 166/34	18.95	15.09	6.38	88.0	2.86	105.15	D. 14/33	13.90
	D. 14/33	18.38	14.17	5.30	91.0	2.60	95.59	D. 166/34	12.24
	P.O.J. 2878	16.09	14.07	7.66	84.3	2.26	83.09	P.O.J. 2878	10.58
	Mean:					2.72	100.00		
	Significant Difference, 20: 1:					0.58	21.32		
		Sophia, Field 4		*W."A."*	*Reaped*	*15.iii.45*	*at 11.50*	*months.*	
MEANS OF 4 PLOTS:	D. 201/36	38.31	14.68	7.36	89.8	5.62	116.60	D. 201/36	16.46
	D. 166/34	29.12	16.32	2.95	91.1	4.76	98.76	D. 200/36	15.72
	P.O.J. 2878	30.72	15.47	3.46	89.5	4.75	98.55	P.O.J. 2878	14.12
	D. 200/36	29.48	14.05	6.02	87.5	4.14	85.89	D. 166/34	13.66
	Mean:					4.82	100.00		
	Significant Difference, 20 : 1 :					—	—		
		Sophia, Field 4		*W."B."*	*Reaped*	*13.iii.45*	*at 11.50*	*months.*	
MEANS OF 4 PLOTS:	B. 34104	26.18	15.67	3.45	89.4	4.10	116.15	B. 34104	13.46
	D. 14/33	23.28	16.28	2.81	91.6	3.79	107.37	D. 14/33	12.68
	D. 1/37	25.38	14.56	4.27	88.0	3.69	104.53	D. 166/34	11.53
	D.166/34	19.66	16.03	3.18	91.0	3.15	89.24	D. 1/37	11.45
	P.O.J. 2878	20.27	14.46	4.38	89.0	2.93	83.00	P.O.J. 2878	9.99
	Mean:					3.53	100.00		
	Significant Difference, 20: 1:					0.74	20.96		

SECOND RATOON VARIETY TRIALS REAPED IN BERBICE AND EAST DEMERARA.

Only one second ratoon variety trial each was harvested in Berbice and East Demerara and their results appear in Table VIII where it will be seen that at Rose Hall both D. 14/33 (Co. 281 x Daimond 10) and D. 200/36 (P.O.J. 2878 x Co. 213) were definitely superior to the standard, while at Providence, Demerara, D. 166/34 (P.O.J. 2878 x Sorghum) gave a very satisfactory yield.

TABLE VIII.—**Results of Second Ratoon Variety Trials Reaped in Berbice and East Demerara.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for all Harvests.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
	Pln. Rose Hall,		*Field*	*27 T.*	*Reaped*	*19.iv.45*	*at 11.75*	*months.*	
MEANS OF 5 PLOTS:	D. 14/33	26.63	15.42	2.71	87.9	4.11	117.76	D. 14/33	6.92*
	D. 200/36	26.58	14.05	5.11	88.4	3.74	107.16	D. 200/36	6.58
	D. 166/34	20.78	14.72	3.71	89.0	3.06	87.68	D. 166/34	5.80
	P.O.J. 2878	21.79	13.79	4.10	87.7	3.04	87.10	P.O.J. 2878	5.57
	Mean:					3.49	100.00		
	Significant Difference, 20: 1:					0.37	10.60		
	Pln. Providence, (Dem.),			*Field 51*	*52 R.P.*	*Reaped*	*6.xii.45*	*at 13.25 months.*	
MEANS OF 5 PLOTS:	D. 166/34	30.80	15.10	4.96	89.2	4.65	106.41	D. 166/34	14.09†
	D. 43/38	31.46	14.33	3.89	90.7	4.51	103.20	D. 43/38	12.83
	P.O.J. 2878	28.25	14.02	5.40	88.2	3.96	90.62	P.O.J. 2878	11.77
	Mean:					4.37	100.00		
	Significant Difference, 20: 1:					0.49	11.21		

*2 Crops, Plants and 1st Ratoons.

†3 Crops, Plants, 1st and 2nd Ratoons.

SUB-SECTION D.—DISCUSSION AND SUMMARY.

Table IX compares the performance of all the canes on the basis of their sucrose yields in all experiments to date, P.O.J. 2878 serving as a standard, while Table X compares, for some of the more important varieties, certain data indicative of cane quality.

TABLE IX.—**General Mean Sucrose Yields in Tons per Acre from All Experiments.**

Variety.	Plants.		First Ratoons.		Second Ratoons.		Total Yield.	Total Yield, P.O.J. 2878 = 100.00
	Yield.	No. of Expts.	Yield.	No. of Expts.	Yield.	No. of Expts.		
	Three	*Crops,*	*Plants,*	*First*	*and Sec*	*ond Rat*	*oons.*	
D. 14/34	5.94	9	5.37	10	4.63	8	15.94	140.07
Co. 421	6.07	12	5.32	10	4.53	9	15.92	139.89
B. 34104	5.93	11	5.04	9	4.61	8	15.58	136.91
D. 25/38	5.86	11	4.78	8	4.83	2	15.47	135.94
D. 38/38	6.25	1	5.01	1	4.02	1	15.28	134.27
D. 14/33	5.56	10	4.98	9	4.27	9	14.81	130.14
D. 28/38	5.74	5	4.53	4	4.36	1	14.63	128.56
D. 1/37	5.65	8	4.56	7	4.30	7	14.55	127.86
D. 200/36	5.38	9	5.04	9	3.89	6	14.31	125.75
Co. 419	5.08	9	4.55	10	4.22	10	13.85	121.70
D. 201/36	5.09	7	4.57	6	4.02	3	13.68	120.21
D. 43/38	5.29	8	4.31	6	3.92	2	13.52	118.80
D. 166/34	5.21	48	4.29	42	3.78	22	13.28	116.70
P.O.J. 2878	**4.62**	**169**	**3.68**	**124**	**3.08**	**80**	**11.38**	**100.00**
	Two	*Crops,*	*Plants*	*and First*	*Ratoons.*			
D. 30/40	6.11	3	5.10	1	—	—	11.21	135.06
D. 21/40	5.76	5	5.30	1	—	—	11.06	133.25
Co. 331	5.67	11	5.01	6	—	—	10.68	128.67
D. 26/39	5.37	6	5.07	6	—	—	10.44	125.78
D. 2/40	5.47	5	4.92	2	—	—	10.39	125.18
D. 26/38	5.90	1	4.17	1	—	—	10.07	121.33
D. 4/40	5.53	4	4.34	2	—	—	9.87	118.92
D. 24/40	5.39	4	4.33	3	—	—	9.72	117.11
D. 37/39	4.79	5	4.40	2	—	—	9.19	110.72
D. 10/40	5.30	2	3.69	1	—	—	8.99	108.31
D. 11/40	5.52	4	3.46	1	—	—	8.98	108.19
P.O.J. 2878	**4.62**	**169**	**3.68**	**124**	—	—	**8.30**	**100.00**
	One	*Crop,*	*Plants*	*only.*				
D. 40/40	6.63	1	—	—	—	—	6.63	143.51
B. 37161	6.19	1	—	—	—	—	6.19	133.98
D. 22/40	5.62	2	—	—	—	—	5.62	121.64
D. 34/40	5.54	2	—	—	—	—	5.54	119.91
D. 33/40	5.35	1	—	—	—	—	5.35	115.80
D. 27/40	4.88	1	—	—	—	—	4.88	105.63
D. 31/40	4.84	1	—	—	—	—	4.84	104.76
P.O.J. 2878	**4.62**	**169**	—	—	—	—	**4.62**	**100.00**
D. 14/40	4.59	1	—	—	—	—	4.59	99.35
D. 34/38	3.77	4	—	—	—	—	3.77	81.60

TABLE X.—**The Quality of the Most Promising Seedlings as Compared with P.O.J. 2878.**

Variety.	Pol. % Cane.		Juice Purity.		Glucose Ratio.		Fibre % Cane.	
	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.	% of P.O.J. 2878.	No. of Comparisons.
D. 14/33	108.66	28	103.29	28	73.88	28	106.66	26
D. 14/34	111.04	27	103.36	27	76.42	27	108.26	25
D. 166/34	103.94	106	100.86	106	95.80	106	98.70	102
D. 200/36	102.11	24	100.72	24	100.27	24	108.62	23
D. 25/38	100.62	21	101.75	21	75.41	21	119.75	18
D. 28/38	108.08	10	101.42	10	63.56	10	—	—
D. 38/38	108.92	3	102.48	3	92.41	3	85.07	1
D. 26/39	105.47	12	102.01	12	65.80	12	—	—
D. 21/40	93.97	6	97.42	6	128.91	6	—	—
D. 30/40	101.50	4	100.60	4	68.53	4	—	—
D. 40/40	106.53	1	100.36	1	125.71	1	—	—
B. 34104	105.08	28	102.09	28	86 90	28	114.73	26
B. 37161	108.60	1	96.05	1	135.59	1	67.62	1
Co. 419	101.01	29	99.79	29	96.49	29	97.87	26
Co. 421	103.02	31	100.99	31	87.28	31	111.48	31
Co. 331	95.41	17	98.70	17	80.79	17	113.52	17
P.O.J. 2878	100.00	—	100.00	—	100.00	—	100.00	—

D. 14/34 (Co. 281 x Diamond 10), Co. 421 (P.O.J. 2878 x B. 3412), B. 34104 (Co. 281 x B.H. 10/12) and D. 14/33 (Co. 281 x Diamond 10) have been well tested and there can be no doubt as to their superiority over P.O.J. 2878. The first and last-named of these four yield cane of higher quality than the other two and the fuel value of their bagasse is very satisfactory although they contain a lower percentage of fibre than do Co. 421 or B. 34104. D. 14/33 and D. 14/34 are light arrowers and therefore suited for Spring or Autumn reaping but Co. 421 and B. 34104 tend to arrow freely.

D. 25/38 (Co. 421 x Diamond 10) requires some further testing but its results to date are so promising that nursery material is being distributed to the estates and each should have some by the end of the year. It is a good germinator which grows rapidly and yields heavy tonnages of cane slightly superior in quality to that of P.O.J. 2878. D. 25/38 flowers freely and for this reason will be more acceptable for Autumn than for Spring harvest.

D. 200/36 (P.O.J. 2878 x Co. 213) seems likely to improve its position as more tests are harvested. Some excellent fields of this cane have been seen on the estates and it has the advantages of being rather erect and of satisfactory thickness. It arrows freely and would thus be most suitable for Autumn reaping.

While there can be no doubt as to the superiority of Co. 419 (P.O.J. 2878 x Co. 290) and D. 166/34 (P.O.J. 2878 x Sorghum) over P.O.J. 2878, they

will hardly compete with the canes discussed in the preceding paragraphs. However, more than one estate Manager has found Co. 419 well adapted to the pegassy clay and it may render limited service in that direction for Autumn reaping, it being a free and early arrower.

D. 28/38 (Co. 421 x Diamond 10) yields fair tonnages of high quality cane and merits further testing.

D. 1/37, D. 201/36 and D. 43/38 will be discarded from further tests.

Of the canes in the two-crop section of Table IX, the five listed just above P.O.J. 2878 will be discarded.

Some further tests will be made on Co. 331 (Co. 214 x Co. 213) but its position depends mainly on high tonnage of mediocre-quality cane.

The other canes merit further testing and D. 21/40 (Co. 421 x Co. 419) and D. 26/39 (Co. 421 x D. 166/34), in particular, show considerable promise.

All of the seedlings in the one-crop section of Table IX will be discarded except the two first which will be tested further.

Estates are advised :

i. To make their main plantings with D. 14/34, Co. 421, B. 34104 and D. 14/33;

ii. To establish some trial fields of D. 200/36 on frontland and pegassy clay;

iii. To establish and extend nurseries of D. 25/38;

iv. To avoid planting heavy arrowers like Co. 421, B. 34104, D. 200/36 and D. 25/38 for late Spring reaping.

MANURIAL TRIALS.

The results of 14 manurial experiments harvested during the period under review, are presented in five sub-sections, *viz.*,

A—Nitrogenous manures,

B—Phosphatic manures,

C—Potassic manures,

D—Liming materials,

E—Organic manures,

F—Discussion and summary.

Where the experiments were of a complex nature, involving dressings of more than one element, the response to each element is discussed under the appropriate sub-section.

SUB-SECTION A.—NITROGENOUS MANURES.

(A 1—A 6) Various Sources of Nitrogen on Flood-fallowed Frontland.

Fields 7 S.G., Skeldon; 6 A., Albion; 9 E.B., Providence, B.; 16 E.E., Enmore; 61 V.S., La Bonne Intention and 57 I., Ogle.

(Plant cane results reported in Sugar Bull. No. 12, p. 21.)
(First ratoon results reported in Sugar Bull. No. 13, p. 17.)

It will be seen from Table XI that, as in the case of the plant canes and first ratoons, sodium nitrate was less satisfactory than ammonium sulphate, whether or not the latter was accompanied by one ton/acre of limestone. Cyanamide, which had held a place just under ammonium sulphate in the previous two cycles, was even slightly below sodium nitrate on this occasion. The mixture of ammonium sulphate and sodium nitrate proved almost as efficient as the former alone.

Treatments in Cwt. per Acre.		Skeldon, Field 7 S.G. P.O.J. 2878. 2nd Ratoons.	Albion, Field 6 A. Co. 419. 2nd Ratoons.	Providence, B., Field 9 E.B. P.O.J. 2878. 2nd Ratoons.	Enmore, Field 16 E.E. Co. 419. 2nd Ratoons.	L.B.I., Field 61 V.S. Diamond 10. 3rd Ratoons.	Ogle, Field 57 I. Diamond 10. 3rd Ratoons.	Mean of 6 Tests.	Total for 3 Crops.
				Mean Yield in Tons Cane per Acre.					
No Manure		20.45	35.69	15.95	29.29	19.77	17.69	23.14	85.19
Amm. Sulph.,	4	27.26	45.68	29.14	37.34	31.71	31.79	33.82	106.90
" "	4	26.55	42.21	30.73	38.44	32.48	30.97	33.56	106.99
Limestone,	20								
Cyanamide,	4	23.16	44.70	25.28	34.48	28.44	25.70	30.29	100.94
Sodium Nitrate,	5.38	23.21	40.90	22.69	33.18	31.01	31.11	30.35	95.93
" "	2.69	32.49	43.86	26.84	35.64	31.50	27.84	33.03	101.59
Amm. Sulph.,	2								
Sig. Diff.,	20:1	7.40	4.19	2.01	4.04	5.28	4.60	2.01	
				Mean Pol % Cane.					
No Manure		15.60	13.39	14.00	15.19	15.92	13.91		
Amm. Sulph.,	4	15.35	13.10	13.89	14.88	16.12	13.51		
" "	4	15.60	13.39	13.90	15.12	16.24	13.99		
Limestone,	20								
Cyanamide,	4	15.73	13.69	14.54	15.11	16.15	14.19		
Sodium Nitrate,	5.38	15.72	12.81	14.08	15.04	15.73	14.09		
" "	2.69	15.70	13.32	14.01	14.70	16.29	14.05		
Amm. Sulph.,	2								
Sig. Diff.,	20:1	—	—	—	—	—	—		
				Mean Glucose Ratio.					
No Manure		4.19	7.35	7.03	4.90	6.87	9.18		
Amm. Sulph.,	4	4.93	7.38	6.92	6.78	8.93	12.92		
" "	4	4.46	7.43	7.63	7.04	7.72	10.56		
Limestone,	20								
Cyanamide,	4	5.15	6.14	6.64	5.60	6.03	7.40		
Sodium Nitrate,	5.38	4.64	6.50	6.30	4.53	6.27	10.89		
" "	2.69	4.56	6.21	6.49	6.13	6.21	10.56		
Amm. Sulph.,	2								
Sig. Diff.,	20:1	—	—	—	—	—	2.57		
				Mean Purity.					
No Manure		90.7	87.1	91.7	89.9	92.0	86.7		
Amm. Sulph.,	4	88.3	86.3	92.0	89.4	90.5	84.7		
" "	4	90.1	86.5	91.4	89.4	91.2	86.6		
Limestone,	20								
Cyanamide,	4	90.1	87.7	91.1	89.3	91.4	88.3		
Sodium Nitrate,	5.38	89.9	86.2	90.1	90.8	91.0	85.7		
" "	2.69	90.9	86.8	91.5	89.8	92.0	87.0		
Amm. Sulph.,	2								
Sig. Diff.,	20:1	—	—	—	—	—	—		

(A 7—A 9) Various Sources of Nitrogen on Pegassy Clay.

Fields 34 S.D., Cane Grove; 96 G.D., and 63 G.G., Diamond.

(Plant cane results reported in Sugar Bull. No. 12, p. 24.)
(First ratoon results reported in Sugar Bull. No. 13, p. 22.)

Unavoidable circumstances have reduced the number of trials in this series to three, the results of which appear in Table XII. There were no very marked differences between the various formulae tested, but ammonium sulphate continued to head the list. It is of interest to note the association of lower tonnage with higher quality in the cyanamide plots at Field 96 G.D., Diamond.

Table XII.—Effect of Various Sources of Nitrogen on Pegassy Clay.

Treatments in Cwt. per Acre.		Cane Grove, Field 34 S.D. P.O.J. 2878. 2nd Ratoons.	Diamond, Field 96 G.D. Diamond 10. 2nd Ratoons.	Diamond, Field 63 G.G. Diamond 10. 3rd Ratoons.	Mean of 3 Tests.	Total for 3 Crops.
		Mean Yield in Tons Cane per Acre.				
No Manure		15.02	24.59	30.12	23.24	79.38
Amm. Sulph.,	5	14.38	34.88	38.67	29.31	90.78
„ „	5					
Limestone,	20	16.18	34.02	41.50	30.57	92.82
Cyanamide,	5	14.80	29.13	39.96	27.96	90.26
Sodium Nitrate,	6.73	17.62	31.91	36.28	28.60	87.28
„ „	3.36					
Amm. Sulph.,	2.50	13.76	32.04	41.12	28.97	90.07
Sig. Diff.,	20:1	—	3.83	3.83	2.49	
		Mean Pol % Cane.				
No Manure		15.08	13.70	14.35		
Amm. Sulph.,	5	14.24	13.25	14.58		
„ „	5					
Limestone,	20	14.68	13.31	15.09		
Cyanamide,	5	14.93	14.40	14.15		
Sodium Nitrate,	6.73	14.64	13.28	14.14		
„ „	3.36					
Amm. Sulph.,	2.50	14.77	13.22	14.56		
Sig. Diff.,	20:1	—	0.83	—		
		Mean Glucose Ratio.				
No Manure		5.27	6.91	7.50		
Amm. Sulph.,	5	5.27	6.58	10.71		
„ „	5					
Limestone,	20	4.72	6.70	8.42		
Cyanamide,	5	5.07	6.24	12.23		
Sodium Nitrate,	6.73	3.94	7.23	7.86		
„ „	3.36					
Amm. Sulph.,	2.50	3.51	8.77	12.49		
Sig. Diff.,	20:1	—	—	—		
		Mean Purity.				
No Manure		91.5	88.1	89.4		
Amm. Sulph.,	5	89.9	87.7	89.2		
„ „	5					
Limestone,	20	89.8	87.2	88.5		
Cyanamide,	5	91.4	90.0	87.1		
Sodium Nitrate,	6.73	91.8	87.0	88.9		
„ „	3.36					
Amm. Sulph.,	2.50	91.2	87.6	89.7		
Sig. Diff.,	20:1	—	—	—		

SUB-SECTION B.—PHOSPHATIC MANURES.

(B 1—B 3) Phosphatic Manuring on Flood-fallowed Frontland.

Fields 3 Ab., 13 B.L., and 26 Rp., Blairmont.

(Plant cane results reported in Sugar Bulls. No. 11, p. 25 and No. 13, p. 24.)
(First and second ratoon results reported in Sugar Bull. No. 12, p. 29.)

In none of the tests considered in Table XIII was there any statistically significant residual effect of phosphate on the ratoon crop. However, the indications of a phosphate effect displayed in the plant canes at Field 3 Ab., Blairmont, have been repeated in the first ratoons. Similarly, consideration of the previous cycle at Field 26 Rp., Blairmont, and of the preceding crops of this cycle, suggests a need for phosphate.

Table XIII.—**Effect of Superphosphate on Flood-fallowed Frontland.**

Superphosphate in Cwt./Acre.	lb. P_2O_5	Mean Yields in Tons Cane per Acre. Blairmont. Field 3 Ab., P.O.J. 2878. 1st Ratoons.	Field 3 Ab., P.O.J. 2878. Total for 2 Crops.	Field 13 B.L., Co. 419. 1st Ratoons.	Field 13 B.L., Co. 419. Total for 2 Crops.	Field 26 Rp., P.O.J. 2878. 3rd Ratoons.	Field 26 Rp., P.O.J. 2878. Total for 4 Crops.
0	—	24.09	84.30	54.64	117.74	17.93	111.78
3	54	26.09*	88.37	54.03*	116.71	19.14†	116.88
6	108	23.90*	87.62	57.82*	119.15	18.76†	114.66
9	162	26.16*	87.88	55.03*	117.77	—	—
Sig. Diff., 20: 1:		—		—		—	

*Residual effect from plant cane application.
†Residual effect from applications to the three previous crops.

SUB-SECTON C.—POTASSIC MANURES.

(C 1) Potassium Sulphate on Flood-fallowed Frontland.

Field 26 Rp., Blairmont.

(Plant cane results reported in Sugar Bull. No. 11, p. 28.)
(First and second ratoon results reported in Sugar Bull. No. 12, p. 32.)

While Table XIV suggests that there is some response to potash in Field 26 Rp., Blairmont, it does not appear that such response would be economic when compared with the cost of the fertilizer.

TABLE XIV.—**Effect of Potassium Sulphate on Flood-fallowed Frontland.**

Potassium Sulphate, Cwt./Acre.	Mean Yields in Tons Cane per Acre from P.O.J. 2878 at Blairmont, Field 26 Rp.				
	Plants.	1st Ratoons.	2nd Ratoons.	3rd Ratoons.	Total for 4 Crops.
0	41.29	27.62	22.23	18.87	110.01
2	41.48	29.18	26.56	18.27*	115.49
4	42.64	28.95	27.53	18.70*	117.82
Sig. Diff., 20. 1:	—	—	4.07	—	

*Residual effect from applications to the three previous crops.

SUB-SECTION D.—LIMING MATERIALS.

(D 1) RESIDUAL EFFECT OF LIMING MATERIALS ON FLOOD-FALLOWED FRONTLAND.

Field 26 Rp., Blairmont.

(Plant cane results reported in Sugar Bull. No. 11, p. 30.)
(First and second ratoon results reported in Sugar Bull. No. 12, p. 35.)

Table XV indicates rather clearly that one ton of limestone per acre at planting on Field 26 Rp., Blairmont, is an economically sound dressing.

TABLE XV.—**Effect of Ground Limestone on Flood-fallowed Frontland.**

Ground Limestone in Tons/Acre to Plant Canes only.	Mean Yields in Tons Cane per Acre from P.O.J. 2878 at Blairmont, Field 26 Rp.				
	Plants.	1st Ratoons.	2nd Ratoons.	3rd Ratoons.	Total for 4 Crops.
0	40.10	27.53	24.84	17.58	110.05
1.0	43.17	28.68*	24.99*	19.27*	116.11
2.0	42.14	29.55*	26.49*	18.99*	117.17
Sig. Diff., 20: 1:	2.47	—	—	—	

*Residual effect from plant cane application.

SUB-SECTION E.—ORGANIC MANURES.

(E 1) Molasses on Flood-fallowed Frontland.

Field 5 Rp., Blairmont.

(Third ratoon results reported in Sugar Bull. No. 12, p. 41.)

Table XVI shows that the statistically significant effect of the molasses dressings observed on the third ratoons of the previous cycle were not apparent in the plant canes after a period of flood-fallow. However, the general level of fertility in the field is so high that even the normal 2 cwt./acre of ammonium sulphate did not have any effect on the plant cane yield. It is therefore possible that the picture will become clearer in the ratoons as the flood-fallow effect dwindles.

TABLE XVI.—**Effect of Molasses on Flood-fallowed Frontland.**

Fertilizer.	Treatments per Acre.		Mean Yields in Tons Cane per Acre. Field 5 Rp., Blairmont. Diamond 10. D. 14/34.		
	3rd Ratoons, 1943.	Plants, 1945.	3rd Ratoons, 1943.	Plants, 1945.	Total for 2 Crops.
No Manure	—	—	35.78	51.33	87.11
Amm. Sulph., Cwt.	4	2	41.55	51.17	92.72
Molasses on Bank, Tons.	5	—	41.20	49.90	91.10
Amm. Sulph., Cwt.	2	1			
Molasses in Row, Tons.	5	—	43.00	53.15	96.15
Amm. Sulph., Cwt.	2	1			
Molasses on Bank, Tons.	10	—	36.05	52.07	88.12
„ in Row, Tons.	10	—	37.58	52.76	90.34
Sig. Diff., 20: 1:			3.81	—	

(E 2) Molasses on Pegassy Clay.

Field 6 Rp., Blairmont.

(Third ratoon results reported in Sugar Bull. No. 12, p. 43.)

It is unfortunate that the plant cane results which appear in Table XVII did not meet the tests for general significance, but there are strong indications that the marked beneficial effects of the molasses on the third ratoons of the previous cycle have persisted, through the flood-fallow period, to be of service to the plant cane crop.

TABLE XVII.—Effect of Molasses on Pegassy Clay.

Fertilizer.	Treatments per Acre.		Mean Yields in Tons Cane per Acre.		
			Field 6 Rp., Blairmont.		
	3rd Ratoons, 1943.	Plants, 1945.	P.O.J. 2878.	D. 14/34.	
			3rd Ratoons, 1943.	Plants, 1945.	Total for 2 Crops.
No Manure	—	—	18.00	29.81	47.81
Amm. Sulph., Cwt.	4	2	29.52	37.77	67.29
Molasses on Bank, Tons.	5	—	31.19	37.68	68.87
Amm. Sulph., Cwt.	2	1			
Molasses in Row, Tons.	5	—	30.00	33.33	63.33
Amm. Sulph., Cwt.	2	1			
Molasses on Bank, Tons.	10	—	28.45	35.84	64.29
„ in Row, Tons.	10	—	26.40	35.90	62.30
Sig. Diff., 20: 1:			3.63	—	

SUB-SECTION F.—DISCUSSION AND SUMMARY.

Nitrogenous Manures.

Further evidence is presented which confirms the finding already published that sodium nitrate is not as efficient as ammonium sulphate.

Phosphatic Manures.

Two areas at Blairmont (Fields 3 Ab. and 26 Rp.) show indications of a need for phosphate but there was no response on the high-yielding Field 13 B.L. on the same estate.

Potassic Manures.

While there were signs of a need for potash at Field 26 Rp., Blairmont, it is doubtful if the dressings would yield economic responses.

Liming Materials.

The experimental data suggest that one ton of limestone per acre at planting would prove economically sound at Field 26 Rp., Blairmont.

Organic Manures.

While the results were not as clear-cut as desirable, it does seem that molasses applied on the third ratoons of one cycle can exert a residual effect on the plant canes of the next, despite a period of flood-fallow, especially in pegassy clay.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XI.

BY

C. HOLMAN B. WILLIAMS,

Sugar Agronomist and Plant Breeder.

VARIETAL COMPOSITION OF THE 1946 HARVESTS.

Table I is compiled from returns kindly supplied by the sugar estates, which produce some 98% of the Colony's output. Canefarmers, who produce the remaining 2% of the crop, plant mainly P.O.J. 2878 and Diamond 10.

TABLE I.—**Percentage Distribution of the Varieties to be Reaped in 1946.**

Variety.	Total English Acres in the Colony.		Percentage			
			in West Demerara.	along Demerara River Banks.	in East Demerara.	in Berbice.
P.O.J. 2878	24,760.65	(40.4)	12.9	4.3	30.4	52.4
Diamond 10	15,588.01	(25.4)	11.3	61.8	11.0	15.9
Co. 421	9,274.76	(15.1)	17.2	12.2	22.6	48.0
Co. 419	3,998.95	(6.5)	40.4	7.0	13.8	38.8
D. 14/34	2,550.90	(4.2)	15.2	7.9	36.5	40.4
D. 14/33	1,332.49	(2.2)	25.5	1.5	33.9	39.1
D. 166/34	991.17	(1.6)	9.4	21.2	23.8	45.6
B 34104	950.09	(1.6)	11.5	9.5	32.6	46.4
Other Canes	1,842.89	(3.0)	6.9	52.9	14.8	25.4
	61,289.91	(100.0%)				

There has been a welcome halt in the decline of the total acreage and there is hope that the situation will gradually return to normal.

Tables I, II and III indicate :

i. A further considerable reduction in the proportion of P.O.J. 2878;

ii. A tendency for the falling curve of Diamond 10 to flatten out around 25%;

iii. A further marked increase in the area devoted to canes other than P.O.J. 2878 and Diamond 10, from 5.5% of the acreage in 1943, to 9.4% in 1944, to 18.5% in 1945, to 34.2% in 1946.

iv. A decline in the proportion of D. 166/34 and a slight increase in that of Co. 419;

v. Marked increases in the areas devoted to D. 14/33, D. 14/34, D. 200/36, B. 34104 and Co. 421.

TABLE II.—Acreages of the Varieties Constituting "Other Canes."

Variety.	English Acres.		Variety.	English Acres.		Variety.	English Acres.	
	1945	1946		1945	1946		1945	1946
D. 49/30	183	212	D. 450/33	8	—	B. 34104	105	950*
D. 66/30	149	133	D. 456/33	57	11	Co. 213	60	31
D. 419/33	194	190	D. 200/36	66	425	S.C. 12/4	419	498
			Diamond 201	69	183			

*Shown separately in Table I.

TABLE III.—Comparison of Areas Under Various Canes in British Guiana, 1939–1946.

Variety.	Per Cent. of Total Area in the Colony.							
	1939	1940	1941	1942	1943	1944	1945	1946
D. 625	8.0	2.8	0.6	..	..	..	..	..
"Mixed"	0.8	0.6	0.2	..	..	..	..	..
Diamond 10	43.5	37.1	31.1	28.1	26.5	25.5	26.7	25.4
P.O.J. 2878	45.7	57.6	66.0	68.8	68.0	65.1	54.8	40.4
D. 166/34	..	..	..	..	1.6	2.2	2.2	1.6
Co. 419	..	..	..	..	1.3	3.0	4.9	6.5
Co. 421	..	..	..	..	..	1.6	6.3	15.1
D. 14/34	..	..	..	..	..	..	1.7	4.2
D. 14/33	..	..	..	..	..	..	1.0	2.2
B. 34104	..	..	..	..	..	..	..	1.6
Other Canes	2.0	1.9	2.1	3.1	2.6	2.6	2.4	3.0

CYCLE AGE OF THE CROPS.

Table IV shows that improvement in the percentage figure for plant canes, reported for 1945, has been accentuated.

TABLE IV.—Cycle Age of the Crops, 1943–1946.

Category	Percentage in				Category	Percentage in			
	1943	1944	1945	1946		1943	1944	1945	1946
Plants	22.4	17.4	24.9	29.3	3rd Ratoons	16.7	20.7	22.3	18.2
1st Ratoons	29.2	24.4	17.2	23.6	4th Ratoons	6.1	6.3	9.1	10.1
2nd Ratoons	24.4	28.2	24.0	16.4	5th Ratoons	1.2	3.0	2.5	2.4

COMMERCIAL YIELDS.

Table V presents the weighted mean yields of the various canes reaped on the estates in 1945. In several instances only comparatively small acreages are involved and undue stress should, therefore, not be placed on the order of merit. However, there can be no doubt but that the commercial results confirm, in general, the findings of the experimental work and the advice based on it.

FERTILIZERS IN 1945.

Table VI, adapted from the Reports of the Comptroller of Customs, shows the fertilizer imports for the past six years. As in 1944, supplies of nitrogen were adequate in 1945 and there was a further slight reduction in their cost. The limestone imports rose slightly but supplies were still unsatisfactory in 1945 and the value per ton disquietingly high. A small delivery of calcium superphosphate was very welcome.

Almost all the imported fertilizers are used on the sugar estates and Table VII, compiled from returns kindly supplied by the estate Managers, gives statistics of quantities and prices for 1943 to 1945.

TABLE V.—Weighted Mean Commercial Yields under Estate Conditions, 1945.

Variety.	Acres Harvested.	Crusher Juice		Fibre % Cane.	Tons 96° Sugar per Acre.*
		Pol. %	Purity.		
		Plant Canes.			
B. 34104	119.0	15.71	84.84	12.79	5.10
Diamond 201	22.0	16.00	86.59	11.70	4.56
Co. 421	2,398.2	14.59	84.34	13.59	4.08
D. 200/36	26.4	15.71	83.69	13.39	3.93
D. 14/34	617.0	14.97	84.02	14.12	3.87
Co. 419	1,187.2	14.57	81.42	13.58	3.73
D. 166/34	276.5	14.64	82.86	12.80	3.64
D. 14/33	460.6	15.24	85.20	14.46	3.62
S.C. 12/4	102.9	—	—	11.30	3.50
P.O.J. 2878	3,278.0	14.28	81.68	14.44	3.38
Diamond 10	4,340.8	14.98	84.00	15.42	3.14
		First Ratoons.			
Co. 421	458.7	14.00	81.55	14.32	3.71
D. 14/33	27.5	14.76	82.79	12.96	3.55
Co. 419	669.6	15.04	82.24	14.60	3.47
D. 14/34	86.5	14.49	83.06	15.03	3.37
Mixed	24.0	14.28	83.99	—	3.34
P.O.J. 2878	3,900.8	15.17	83.91	15.18	3.11
S.C. 12/4	211.2	—	—	13.30	2.93
Diamond 10	3,725.0	14.91	83.46	15.80	2.86
D. 419/33	44.0	15.08	85.20	—	2.85
D. 49/30	103.3	16.03	86.36	13.61	2.79
D. 166/34	250.0	14.69	83.27	14.30	2.73
Diamond 201	25.0	14.77	83.48	11.40	2.61
		Second Ratoons.			
D. 66/30	46.0	14.98	82.92	—	3.36
D. 330/33	20.0	14.49	82.70	—	3.21
Co. 419	701.5	15.00	82.96	13.71	3.00
Co. 421	176.0	14.81	82.09	15.40	2.94
Diamond 201	24.0	14.48	85.70	13.00	2.92
D. 14/34	15.7	14.34	81.58	—	2.77
D. 419/33	112.0	14.48	81.88	15.22	2.69
Diamond 10	4,154.6	15.47	84.67	14.91	2.61
D. 166/34	577.0	15.52	84.78	13.44	2.52
P.O.J. 2878	7,407.8	14.80	82.54	15.09	2.50
S.C. 12/4	64.7	—	—	—	2.43
D. 49/30	48.7	17.22	87.65	13.45	2.01
		Third Ratoons.			
Co. 419	71.3	15.21	82.72	13.54	3.43
D. 66/30	72.5	14.70	82.29	—	2.96
D. 456/33	45.0	16.38	85.79	13.86	2.91
P.O.J. 2878	9,731.0	15.01	83.28	15.28	2.51
D. 166/34	149.1	14.89	84.06	13.79	2.48
Diamond 10	2,258.1	15.82	85.01	15.12	2.44
Mixed	29.7	14.27	82.56	—	2.28
Co. 213	43.3	13.49	80.74	—	2.26
S. C. 12/4	14.0	—	—	—	2.21

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE VI.—Fertilizers Imported into British Guiana in Recent Years.

Year.	Nitrogenous Fertilizers (almost entirely Ammonium Sulphate).			Manurial Lime and Limestone.			Other Fertilizers (mainly Superphosphate and Basic Slag with some Potassium Sulphate).			Total Imports.	
	Tons.	Value $	Value per Ton, $	Tons.	Value $	Value per Ton, $	Tons.	Value $	Value per Ton, $	Tons.	Value $
1940	17,179†	1,000,526†	58.24	5,585	41,915	7.50	1,809*	54,429*	30.09	24,573	1,096,870
1941	8,315†	592,555†	71.26	9,012	70,934	7.87	203	6,893	33.96	17,530	670,382
1942	6,040†	553,161†	91.58	5,642	61,810	10.96	301*	15,454*	51.34	11,983	630,425
1943	2,051†	185,042†	90.22	1,015	14,787	14.57	22*	949*	43.14	3,088	200,778
1944	11,993†	879,468†	73.33	2,581	37,963	14.71	...	...	...	14,574	917,431
1945	10,938†	756,971†	69.21	2,916	51,185	17.55	180*	7,022*	39.01	14,054	815,178
Mean	9,419	661,287	70.21	4,458	46,432	10.42	503	16,949	33.70	14,380	724,668
% of Mean Annual Imports:	65.50	91.25		31.00	6.41		3.50	2.34			

*Includes
- 1940: 42 tons of Potassium Sulphate, valued at $2,795 or $66.55 per ton.
- 1942: All Superphosphate of Lime.
- 1943: All Pulverized Rock Phosphate.
- 1945: All Superphosphate of Lime.

†Includes
- 1940: 1,001 tons of Sodium Nitrate, valued at $ 50,979 or $ 50.93 per ton.
- 1941: 5,000 „ „ Cyanamide, „ „ $381,873 or $ 76.37 per ton
- 1942: 4,550 „ „ „ „ „ $406,938 or $ 89.44 per ton.
- „ : 1,306 „ „ Ammonium Chloride „ „ $134,426 or $102.93 per ton.
- 1943: 1,339 „ „ Cyanamide „ „ $112,709 or $ 84.17 per ton.
- „ : 706 „ „ Ammonium Chloride „ „ $ 71,587 or $101.40 per ton.
- „ : 5 „ „ „ Nitrate „ „ $ 631 or $126.20 per ton.
- „ : 1 ton „ Potassium Nitrate „ „ $ 115 or $115.00 per ton.
- 1944: 2,738 tons „ Cyanamide „ „ $216,974 or $ 79.25 per ton.
- „ : 1,500 „ „ Ammonium Chloride „ „ $156,867 or $104.58 per ton.
- „ : 41 „ „ „ Nitrate „ „ $ 3,579 or $ 87.29 per ton.
- „ : 2 „ „ Sodium „ „ $ 139 or $ 69.50 per ton.
- 1945: 446 „ „ Cyanamide „ „ $ 39,972 or $ 89.62 per ton.
- „ : 2 „ „ Sodium Nitrate „ „ $ 180 or $ 90.00 per ton.

TABLE VII.—Values and Quantities of Fertilizers Used on British Guiana Sugar Estates, 1943-1945.

Fertilizer.	Value, $			Per cent. of Total Value.			Per Ton, $			Quantity, Tons.			Per cent. of Total Quantity.		
	1943	1944	1945	1943	1944	1945	1943	1944	1945	1943	1944	1945	1943	1944	1945
Ammonium Sulphate	34,505.41	336,618.07	749,692.29	5.6	44.8	86.8	80.46	75.64	77.77	428.87	4,449.98	9,639.80	6.2	41.4	71.1
Calcium Cyanamide	377,444.11	197,589.77	29,570.98	60.8	26.3	3.4	106.63	94.97	90.52	3,539.65	2,080.63	326.68	51.0	19.4	2.4
Sodium Nitrate	...	...	653.76	...	...	0.1	...	...	100.58	...	...	6.50	...	...	0.1
Basic Slag	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...
Superphosphate	3,884.43	3,012.60	12,010.57	0.6	0.4	1.4	58.41	63.83	62.26	66.50	47.20	192.90	1.0	0.4	1.4
Limestone	23,073.30	41,774.21	55,057.36	3.7	5.6	6.4	16.64	15.66	16.98	1,386.82	2,668.25	3,241.52	20.0	24.9	23.9
Potassium Sulphate	222.20	...	...	...	...	...	55.55	...	...	4.00	...	...	...	...	...
Rock Phosphate	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ammonium Chloride	181,560.23	170,916.49	16,219.01	29.3	22.7	1.9	120.37	115.58	111.55	1,508.34	1,478.75	145.40	21.8	13.8	1.1
Ammonium Nitrate	106.42	1,285.30	472.43	...	0.2	...	147.81	92.27	96.22	.72	13.93	4.91	...	0.1	...
Miscellaneous	...	...	30.87	...	...	...	...	...	68.60	...	...	.45	...	...	...
TOTAL	620,796.10	751,196.44	863,707.27	100.0	100.0	100.0	...	...	...	6,934.90	10,738.74	13,558.16	100.0	100.0	100.0

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1945.

STAFF.

C. H. B. WILLIAMS, M.A., A.I.C.T.A., DIP. AGR.	*Sugar Agronomist and Plant Breeder.*
C. CAMERON	*Field Manager.*
G. R. DIAS	*Field Assistant.*
E. PAYNE	*Field Assistant.*
C. A. BANNISTER	*Field Assistant.*
J. TALMA	*Field Assistant.*
H. B. SINGH	*Laboratory Assistant.*
C. A. V. SMITH	*Statistical Assistant.*

2. Mr. Dias resigned on the 31st January to take up an appointment as Overseer on the Staff of Pln. Versailles, W.B., Demerara.

3. Mr. Payne was appointed First Field Assistant as from 19th February.

4. Mr. Talma was appointed Third Field Assistant as from 1st September.

5. Mr. Williams was appointed to act as Deputy Director of Agriculture as from 23rd July *vice* Mr. L. D. Cleare, on leave.

6. Absences of the Staff from duty during the year were as follows :—

	Casual Leave.	*Sick Leave.*	*Vacation Leave.*
Mr. Cameron	28. v.—12. vi.	—	—
Mr. Singh	25. vi.—9. vii.	3—7. iv. and 24—27. ix.	1. xii.—15. i. 46
Mr. Smith	7—13. viii.	27. ix.—4. x. and 12—25. x.	—
Mr. Bannister	27. iv.—14. v.	23—28. viii. and 24. ix.—10. x.	—

COMMITTEE.

7. The following members formed the British Guiana Sugar Experiment Stations' Committee for the year :—

THE DIRECTOR OF AGRICULTURE	*Chairman.*
MR. J. C. GIBSON	*Messrs. Booker Bros., McConnell & Co., Ltd.*
HON. M. B. G. AUSTIN, O.B.E.	*Messrs. Curtis, Campbell & Co., Ltd.*
MR. G. M. ECCLES	*Messrs. S. Davson & Co., Ltd.*
MR. G. H. HOLDEN	*Messrs. Sandbach, Parker & Co., Ltd.*
MR. C. H. PALMER	*Messrs. Booker Bros., McConnell & Co., Ltd.*
MR. R. F. MILNE	*Messrs. Booker Bros., McConnell & Co., Ltd.*

Meetings were held on the 12th February, 30th April, 20th August, 19th November and 12th December, 1945.

FINANCE.

8. The sum of $27,686.00 was voted from the funds of the Sugar Experiment Stations' Committee for the working of the Station during the year; the total spent was $29,208.67.

9. Receipts from Assessments during the year amounted to $22,088.15, those from sale of canes to $6,812.25, and miscellaneous receipts to $364.14.

10. In addition to the amount spent from the funds of the Committee, $710.28 was expended from a special grant made for fertilizer research by the Chilean Nitrate Corporation. This sum, together with those spent in previous years, brings the total spent from this source, to date, to $3,334.14.

EQUIPMENT.

11. Minor repairs were effected during the year to buildings and bridges. On the receipt of new wheels and tyres, the lorry was recommissioned in April.

CANE BREEDING AND INTRODUCTION.

12. Table I lists, under their year of production, the number of Demerara seedlings in field experiments and those under multiplication and selection.

TABLE I.—**Demerara Seedlings in Tests and Undergoing Multiplication, etc., December, 1945.**

Year.	Number of Seedlings.	
	In Test.	Under Multiplication, etc.
1933	1	—
1934	1	—
1936	1	—
1937	—	—
1938	4	—
1939	1	—
1940	4	—
1941	74	36
1942	1	2
1943	—	42
1944	—	32
Total	87	112

13. At the time of writing the 1945 Seedlings are being transplanted to the field. Owing to war conditions and labour shortage, all the transplanting will be done to frontland clay at Sophia.

14. *The 1944 seedlings* have been subjected to their first selection and 32 have been extended on frontland clay at Sophia. As recorded in recent Annual Reports, labour shortages and frequent staff changes handicapped the 1944 breeding programme and in consequence, only 4,153 seedlings of this batch had been transplanted to the field.

TABLE II.—Crosses Attempted, Seedlings Selected, etc., 1944.

Combinations.	No. of Arrows Used.	No. of Boxes Sown.	No. of Seedlings Basketed.	No. of Seedlings Planted in Field.	1st Selection.	
					No.	%
I. Interspecific Crosses.						
1. 4th Nobilized Glagah :—						
B. 3337 x Diamond 10	3	1	1	—	—	—
Total	3	1	1	—	—	—
2. 5th Nobilized Glagah :—						
Co. 421 x Diamond 10	3	2	1,081	390	2	.51
Total	3	2	1,081	390	2	.51
3. 6th Nobilized Glagah :—						
D. 25/38 x Diamond 10	7	10	1,460	510	9	1.76
D. 28/38 x „	6	10	322	120	1	.83
D. 4/40 x „	2	2	83	33	—	—
D. 9/40 x „	6	3	2	—	—	—
D. 11/40 x „	3	3	74	32	—	—
Total	24	28	1,941	695	10	1.44
4. Glagah, Chunnee and Noble Combinations :—						
B. 34104 x Diamond 10	10	9	65	16	—	—
Co. 331 x „	13	12	2,795	1,030	5	.49
Co. 419 x „	2	3	24	—	—	—
D. 14/33 x „	2	2	8	—	—	—
D. 419/33 x „	3	3	2	—	—	—
D. 14/34 x „	4	3	138	22	—	—
D. 200/36 x „	5	4	597	189	1	.53
D. 17/39 x „	3	1	70	33	—	—
D. 37/39 x „	2	2	16	—	—	—
D. 1/40 x „	3	3	1,050	390	—	—
D. 2/40 x „	3	4	65	32	1	3.12
D. 2/43 x „	4	6	1,862	363	—	—
Diamond 10 x Co. 331	2	4	970	345	—	—
B. 34104 x „	6	6	54	24	3	12.50
D. 200/36 x „	2	2	1,073	420	10	2.38
D. 43/38 x „	2	2	398	120	—	—
D. 2/40 x „	2	2	1	—	—	—
D. 21/40 x „	2	1	508	40	—	—
Total	70	69	9,696	3,024	20	.66

TABLE II. (Contd.).—**Crosses Attempted, Seedlings Selected, etc., 1944.**

Combinations.	No. of Arrows Used.	No. of Boxes Sown.	No. of Seedlings Basketed.	No. of Seedlings Planted in Field.	1st Selection.	
					No.	%
5. 2nd Nobilized Saccharum Robustum :—						
D. 114/36 x Diamond 10	3	4	57	—	—	—
Total	3	4	57	—	—	—
6. 4th Nobilized Saccharum Barberi :—						
B. 37161 x Diamond 10	3	1	—	—	—	—
Total	3	1	—	—	—	—
7. Other Combinations :—						
D. 114/36 x Co. 331	3	2	127	44	—	—
Total	3	2	127	44	—	—
Grand Total	109	107	12,903	4,153	32	.77

15. Cane varieties imported during the year through the Central Plant Quarantine Station, I.C.T.A., Trinidad, B.W.I., were as follows:—

B. 37172, B. 38212, B. 4098, B. 40102, B. 40105, B. 4110, B. 4145, B. 41227, B. 4214, B. 4226, B. 42114, B. 42231, B. 42279, M. 340, M. 341 and P.R. 903.

EXPERIMENTS.

16. In Sugar Bulletin No. 14 the experiments reaped during the year have been fully reported and they will not be discussed here. At the end of the year there were 36 variety, 14 manurial, 7 cultivation. Considerable attention was devoted to microplot fertilizer tests with maize. A full report on these will be presented later but it can be said now that the technique shows promise of being very useful in determining the fertilizer needs of the rather variable pegassy clay areas.

MISCELLANEOUS.

17. Table III gives statistics, for recent years, as to seedlings bred, field experiments started and reaped, cane cuttings distributed, cane samples analysed, etc.

18. A Farmers' Field Day was held on the 29th October.

19. Six cuttings of D. 166/34 were shipped to the Central Plant Quarantine Station, I.C.T.A., Trinidad, B.W.I.

TABLE III.—Statistics of Seedlings, Cane Distribution, Field Experiments, Cane and Soil Samples, Canes Sold and Visits Paid to Estates, 1936-1945.

Year.	Seedlings basketed.	Cane Cuttings Distributed.		Field Experiments.		Cane Samples.		Soil Samples taken.	Cane Sold to Pln. Ogle.		No. of Days visiting Estates.
		No. of Cuttings.	No. of Bags.	Started.	Harvested.	No. taken and analysed.	Cane crushed (Tons).		Deliveries (Tons).	Net Receipts, $	
1936	23,210	509,600	3,920	60	71	4,804	40	258	1,605.45	3,378.75	258
1937	23,421	333,222	2,563	28	104	4,192	46	336	1,714.70	3,374.39	237
1938	12,151	221,780	1,706	17	104	3,263	34	38	1,697.05	3,219.35	174
1939	9,714	372,320	2,864	29	76	1,797	21	208	1,326.95	2,818.25	184
1940	19,557	430,950	3,315	41	56	559	14	42	1,114.40	2,657.55	216
1941	21,354	637,780	4,906	30	62	626	7	18	1,077.50	2,713.32	230
1942	6,007	881,660	6,782	28	74	909	21	9	1,476.70	3,718.98	212
1943	8,951	524,810	4,037	19	78	819	16	159	1,352.85	3,525.65	211
1944	12,903	602,420	4,634	11	72	434	14	31	1,590.09	5,053.26	139
1945	6,040	578,240	4,448	98*	118†	605	14	95	1,461.02	6,812.25	173

* Includes 64 Maize Micro-plot Experiments.

† Includes 53 „ „ „ „

RAINFALL.

Table IV compares the 1945 monthly rainfall at the Sugar Experiment Station with the monthly averages for 1921-1945.

TABLE IV.—**Comparison of the Rainfall at Sophia for the year 1945, with the Average for 1921-1945.**

Month.	Actual Rainfall, 1945, Inches.	Average Rainfall, 1921—1945, Inches.	Excess or Deficit, Inches.
January 1945	2.55	8.76	— 6.21
February „	18.57	4.62	13.95
March „	2.32	4.68	— 2.36
April „	9.98	6.19	3.79
May „	19.97	11.87	8.10
June „	24.21	14.90	9.31
July „	10.81	11.39	— 0.58
August „	1.99	7.75	— 5.76
September „	2.11	2.63	— 0.52
October „	2.50	3.92	— 1.42
November „	9.41	5.69	3.72
December „	10.84	14.66	— 3.82
Total	115.26	97.06	18.20

ACKNOWLEDGEMENTS.

21. The cordial co-operation of the Staff of the Sugar Estates and of the Sugar Experiment Station is very gratefully acknowledged.

C. HOLMAN B. WILLIAMS,
Sugar Agronomist and Plant Breeder.